

REMARKS

Responsive to the outstanding Office Action, applicant has carefully studied the Examiner's rejections and the comments relative thereto. Favorable reconsideration of the application is respectfully requested in light of the following detailed arguments.

After amendment, claims 17-22 and 28-42 are pending in this application. In this response, claims 17, 19 and 20 have been amended. It is respectfully submitted that no new matter has been presented in these amendments.

A request for a three month extension of time, with the appropriate fee, has been submitted herewith.

CLAIM OBJECTIONS

Claims 19 and 20 were objected to because of minor informalities. In response thereto, claims 19 and 20 have been amended in a manner believed to overcome these informalities. Withdrawal of these rejections is therefore respectfully requested.

REJECTIONS UNDER 35 USC §102

Claims 17-22, 28-31 and 41-42 were rejected under 35 USC §102 as being anticipated by US 5,624,998 to Itoh et al.

Before discussing the prior art, applicant would like to point out for the Examiner's convenience features of the present invention. The present invention, as defined in claim 17, relates to a clear intumescent interlayer produced by drying a clear stable aqueous solution comprising an alkali metal silicate waterglass, a water soluble aluminate and a hydroxy carboxylic acid according to under controlled conditions.

It should be noted that claim 17 has been amended herein. The Examiner stated that the drying step referred to in claim 17 provided no patentable distinction; therefore, applicants have removed this subject matter from the claim. It is respectfully submitted that the claims are allowable for the reasons stated herein below.

Fire resistant glazings comprising an intumescent interlayer which has been obtained by drying a solution of an alkali metal silicate waterglass under controlled

conditions are well known in the art and are sold as articles of commerce. A variety of additives have been proposed for incorporation into these layers in order to improve the fire resistant properties of the glazing. US Patent 4,190,698 (which is discussed in the specification of the present application) proposes the use of a variety of additives including sodium aluminate.

In order to be useful these additives must be sufficiently soluble in the silicate solution to provide interlayers having improved properties: required properties include that they must be capable of being dried to form optically clear interlayers and these interlayers must remain clear over the lifetime of the glazing. Alkali metal silicate solutions are strongly alkaline (as is acknowledged by Itoh at column 1, line 61) and many additives including sodium aluminate form a precipitate when added to them either immediately or upon standing.

The present invention is based upon applicants' discovery that a clear stable interlayer comprising an aluminate salt may be obtained by partially neutralizing that aluminate with a neutralizing hydroxyl carboxylic acid prior to mixing it with the silicate. Itoh nowhere discloses a composition falling within the Applicants claims.

Turning to the applied reference, Itoh discloses aqueous gels comprising particulate metal oxides (see column 2, line 38). These metal oxides are particulate and water insoluble (see column 5, line 39). Itoh proposes a large number of metal oxides including silicon oxide and aluminium oxide (see column 5, line 46). However, Itoh fails to make any showing that a water soluble silicate or aluminate is useful in the aqueous gels disclosed therein. In fact, Itoh teaches to the contrary by clearly stating that the metal oxides are water insoluble and that the gels which are produced contain particulate metal oxides uniformly dispersed therein (column 9, line 45).

The Examiner relies on column 10, line 28 of Itoh to disclose the use of an α hydroxyl carboxylic acid. In this passage Itoh is disclosing the use of an acid (either inorganic or organic) to adjust the pH of the aqueous gel to a value in the range 1 to 8 (column 10, line 9). It is important to note that one skilled in the art would realize that at these acidic pH values, the silicon oxide and the aluminium oxide would not dissolve to form silicate or aluminate species.

It is respectfully submitted that the present invention, as defined in claim 17, are novel because they relate to clear interlayers obtained from solutions comprising silicate and aluminate species and additionally a hydroxyl carboxylic acid. Itoh discloses only the use of particulate oxides, nowhere suggests the combination of silicon oxide and aluminium oxide and does not disclose the combination of these species with a hydroxyl carboxylic acid.

It is respectfully submitted that Claim 18 further distinguishes over the applied reference. Claim 18 requires that the interlayer comprises from 10 to 35% by weight of water. Itoh nowhere discloses a composition comprising this amount of water. At column 6, line 65 he states that the water content of his gels is about 60% or less. This is not a disclosure of a composition comprising from 10 to 35% by weight of water. Itoh, as shown in examples 1-6, clearly indicates that the water content of the gels should not be significantly lower than 60%.

With regards to claims 28 and 29, it is stated that the aluminate is an alkali aluminate. The Examiner opines that Itoh discloses the use of aluminates at column 6, line. It is respectfully suggested that this allegation is not justified. Itoh merely suggests that particulate aluminium oxide can be produced by a variety of means including reaction of sodium aluminate with carbon dioxide or sulphur dioxide.

In view of the above, it is respectfully submitted that claim 17 should be allowable over the art of record.

REJECTIONS UNDER 35 USC §103

Claims 32-40 were rejected under 35 USC §103 as being unpatentable over US Patent 5,624,998 to Itoh, as discussed above. Claims 33-34 and 36 were also rejected under 35 USC §103 as being unpatentable over US Patent 5,624,998 to Itoh, in combination with the website www.pqcorp.com.

With regard to the inclusion of material from the website www.pqcorp.com, applicants strongly oppose this suggestion by the Examiner. The Examiner makes a blanket reference to this website stating that it discloses that ratios claimed in the present invention were commonly known and commercially available at the time of the

invention. It is first submitted that general references to a website, without specific references to specific material disclosed thereon, are too vague to serve as a basis for a rejection of the applied material.

Even more significantly, it is respectfully submitted that it is known that web pages are ephemeral in nature, changing often at the whim of the website manager, for any possible reason from changing business conditions to personal taste. A reference by the Examiner to such a website may have changed by the time the action reached the applicant.

Further, there is nothing to show when that material was posted to the website, nor on what basis it was posted. Material applied against the application must have been known at the time the invention was made to be effective as a reference, as is elucidated in detail in the various subparagraphs of 35 USC §102. Even if a website has a known date of first "publication" there is nothing to suggest that the specific material relied thereon was published on that date. This material cited and applied by the Examiner cannot be shown to have a specific date of publication; cannot be shown to have been known and available at a time wherein it would be suitable as a reference, and is therefore improperly applied in the present matter.

However even if this website was found to be a proper reference, it is respectfully submitted that this website (at least as it shows at the time of the preparation of this response) merely discloses what is the general knowledge of the art. Specifically it discloses a range of alkali metal silicates which are manufactured and sold by the PQ Corporation. The products are highly alkaline solutions which compromise silicate anions and do not contain silica particles. There is nothing on Itoh to suggest that the skilled man should utilize these silicate solutions in place of the silica particles which are useful in his invention.

Similarly, the rejections under 103 in view of Itoh alone are not justified. One skilled in the art would have no incentive to utilize silicate solutions rather than particulate silica. See, for example, the passage beginning at column 9, line 46, wherein Itoh discusses carrying out polymerization in an alkaline medium but states at

line 62 that the suspension of particulate metal oxides are translucent white and not transparent.

Although silicate solutions are and were articles of commerce Itoh nowhere suggests that they are useful in his invention. The disclosure therein is limited to dispersions of metal oxides such as silica and is irrelevant to the present invention.

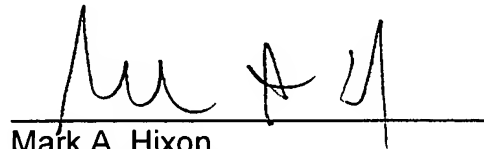
In view of the above it is respectfully submitted that the rejections of the claims under 35 USC §103 have been overcome.

SUMMARY

For the reasons above, it is submitted that independent claim 17 is allowable over the applied art of record. The remaining claims are believed to be allowable based, at least, upon their dependence from allowable base claims as shown above.

Should the Examiner wish to modify any of the language of the claims, applicants' attorney suggests a telephone interview in order to expedite the prosecution of the application.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Mark A. Hixon', is written over a horizontal line.

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